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# SERVICE DATA SHEET

318127068 (0910) Rev. A

Appliance with Electronic Oven Control

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## NOTICE

This service data sheet is intended for use by persons having electrical and mechanical training and a level of knowledge of these subjects generally considered acceptable in the appliance repair trade. **The manufacturer cannot be responsible, nor assume any liability, for injury or damage of any kind arising from the use of this data sheet.**

## SAFE SERVICING PRACTICES

To avoid the possibility of personal injury and/or property damage, it is important that safe servicing practices be observed. The following are some, but not all, examples of safe practices.

1. Do not attempt a product repair if you have any doubts as to your ability to complete it in a safe and satisfactory manner.
2. Before servicing or moving an appliance, remove power cord from electric outlet, trip circuit breaker to Off, or remove fuse.
3. Never interfere with the proper installation of any safety device.
4. USE ONLY REPLACEMENT PARTS SPECIFIED FOR THIS APPLIANCE. SUBSTITUTIONS MAY DEFEAT COMPLIANCE WITH SAFETY STANDARDS SET FOR HOME APPLIANCES.
5. GROUNDING: The standard color coding for safety ground wires is GREEN OR GREEN WITH YELLOW STRIPES. Ground leads are not to be used as current carrying conductors. IT IS EXTREMELY IMPORTANT THAT THE SERVICE TECHNICIAN REESTABLISH ALL SAFETY GROUNDS PRIOR TO COMPLETION OF SERVICE. FAILURE TO DO SO WILL CREATE A POTENTIAL HAZARD.
6. Prior to returning the product to service, ensure that:
  - All electric connections are correct and secure.
  - All electrical leads are properly dressed and secured away from sharp edges, high-temperature components, and moving parts.
  - All uninsulated electrical terminals, connectors, heaters, etc. are adequately spaced away from all metal parts and panels.
  - All safety grounds (both internal and external) are correctly and securely reassembled.
  - All panels are properly and securely reassembled.

## IMPORTANT NOTES

1. This unit includes an *EOC-Relay Board*, *EOC-Display Board*, *ESEC-UIB*, *ESEC-Relay Board* and an *ESEC-RHIB*.
2. The included boards are not field repairable.
3. The oven temperature can be calibrated, see Use and Care Manual.
4. The ■ pin on board connectors indicates pin number 1.

## DATA SHEET ABBREVIATIONS AND TERMINOLOGY

EOC : Electronic Oven Control

ESEC : Electronic Surface Element Control

UIB : User Interface Board

RHIB : Rotary Human Interface Board

LED : Light-Emitting Diode

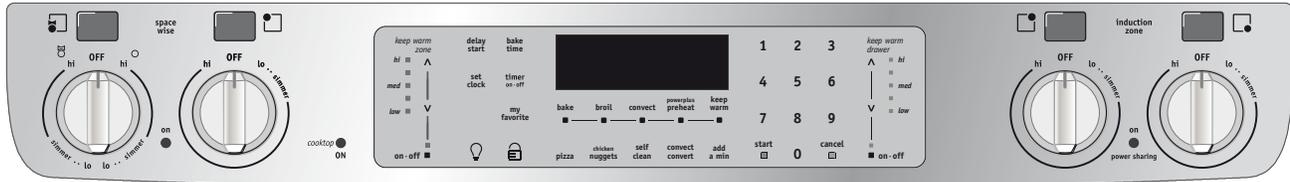
MDL : Motor Door Latch

DLB : Double Line Break

RTD : Resistance Temperature Detector / Oven Probe

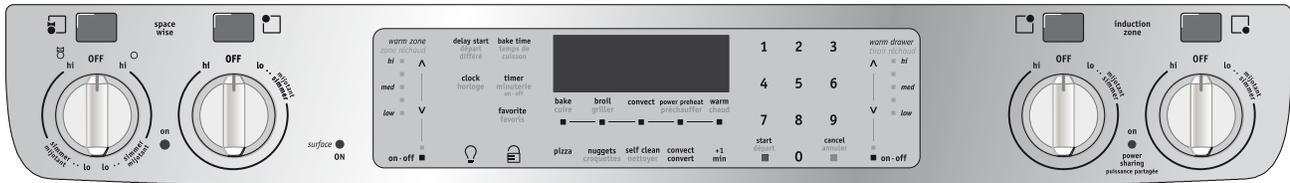
## ILLUSTRATION OF OVEN CONTROLS - US MODEL

### Professional Series:

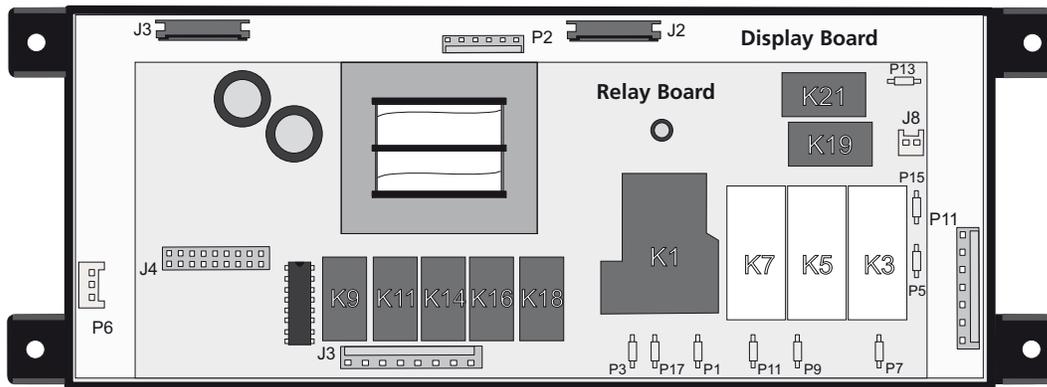


## ILLUSTRATION OF OVEN CONTROLS - CANADIAN MODEL

### Professional Series:



## ELECTRONIC OVEN CONTROL (EOC)



### Relay Board Legend:

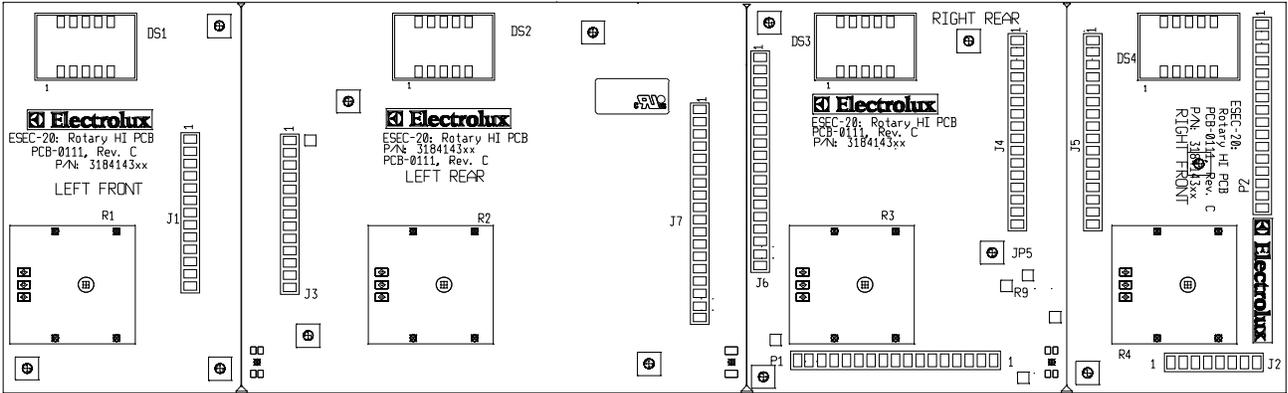
- K1. Double Line Break Relay
  - K3. Broil Relay
  - K5. Bake Relay
  - K7. Convection Element Relay
  - K9. Convection Fan Relay
  - K11. Motor Door Latch Relay
  - K14. Oven Light Relay
  - K16. Cooling Fan Low Speed Relay
  - K18. Cooling Fan High Speed Relay
  - K19. Warmer Zone Relay
  - K21. Warmer Drawer Relay
- J3. Relay Outputs : Motor Door Latch, Oven Light, Convection Fan and Cooling Fan. Power Input (L1 and Neutral).
- J4. Display Board to Relay Board Connections
- J8. Warmer Zone Connector

- P1. L2 Out
- P3. L2 In
- P5. L1 Input
- P7. Broil Connector
- P9. Bake Connector
- P11. Convection Element Connector
- P13. Warmer Drawer Connector
- P15. L1 Input
- P17. L2 In (not used)

### Display Board Legend:

- J2. LED Connector for Touch Membrane
- J3. Keyboard Connector
- P2. Micro Programming Header (not used)
- P6. ESEC Board Communication
- P11. Door switch, Motor Door Latch Switch and Oven Probe Inputs.

# ELECTRONIC SURFACE ELEMENT CONTROL - ROTARY HUMAN INTERFACE BOARD

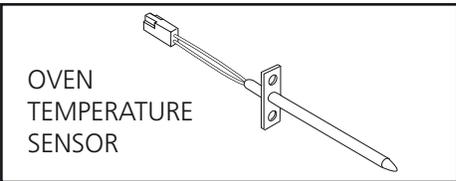


**ESEC - Rotary Human Interface Board Legend:**

- J1. Connected to J3
- J2. Connected to J2 - ESEC20 UIB
- J3. Connected to J1
- J4. Connected to J5
- J5. Connected to J4
- J6. Connected to J7
- J7. Connected to J6
- P1. Connected to P1 - ESEC20 UIB
- P2. Connected to P2 - ESEC20 UIB

RTD SCALE		
Temp. °F	Temp. °C	Resistance (ohms)
32 ± 1.9	0.0 ± 1.1	1000 ± 4.0
75 ± 2.5	23.9 ± 1.4	1091 ± 5.3
250 ± 4.4	121.1 ± 2.4	1453 ± 8.9
350 ± 5.4	176.7 ± 3.0	1654 ± 10.8
450 ± 6.9	232.2 ± 3.8	1852 ± 13.5
550 ± 8.2	287.8 ± 4.6	2047 ± 15.8
650 ± 9.6	343.3 ± 5.3	2237 ± 18.5
900 ± 13.6	482.2 ± 7.6	2697 ± 24.4

OVEN ELECTRICAL RATING		
	Pro. Series Sold in U.-S.	Pro. Series sold in Canada
<b>Bake Element Wattage</b>	2500W / 1878W	2500W / 1878W
<b>Broil Element Wattage</b>	4000W / 3004W	3400W / 2553W
<b>Convection Element Wattage</b>	500W	500W
<b>KW Rating</b>	See serial plate	



## COOKTOP ELECTRICAL RATING

- Left Rear      Radiant Single Element 7"      1800W
- Left Front     Radiant Bridge Element 7"      1800W / 2600W
- Right Rear     Induction 145mm      1500W / Power Boost 1900W
- Right Front    Induction 260mm      2500W / Power Boost 3400W

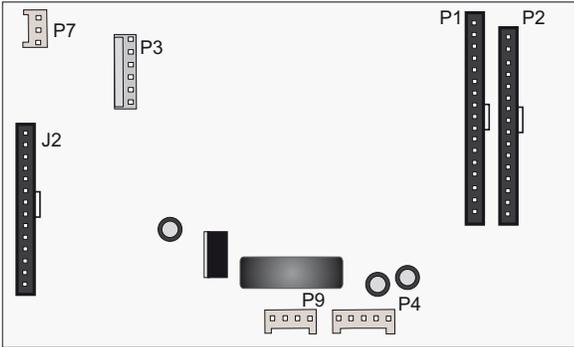
## HYBRID COOKTOP

The Cooktop is provided with 2 induction burners and 2 radiant burners. The ESEC (Electronic Surface Element Control) is designed to command the Relay Board that controls the radiant elements and the Induction Module that controls the induction coils.

The ESEC will control power of the different radiant elements based on the user selected levels. It will turn ON/OFF the elements according to power level requested by the user. The ESEC will maintain the elements temperature by cycling the Relay Board relays using a 40 seconds cycle, each power levels having a different duty cycle.

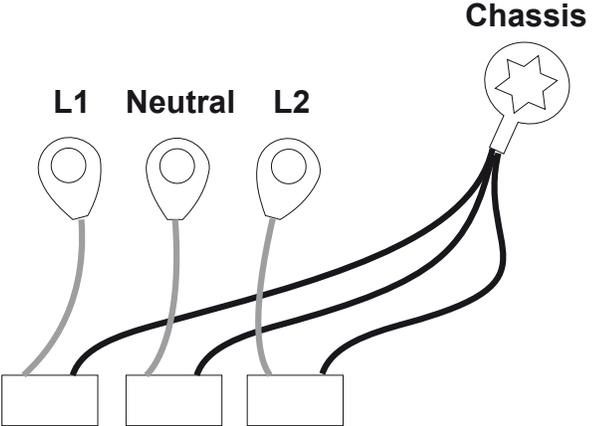
The ESEC will control power of the different induction burners based on the user selected levels. It will supply more or less heat to the cooking zone according to power level requested by the user. Induction zone heat is generated by magnetic field directly in the pot. This means no heat will be produced if there is no cookware on the zone or if the cookware is not suitable for induction cooking.

## ESEC USER INTERFACE BOARD (UIB)

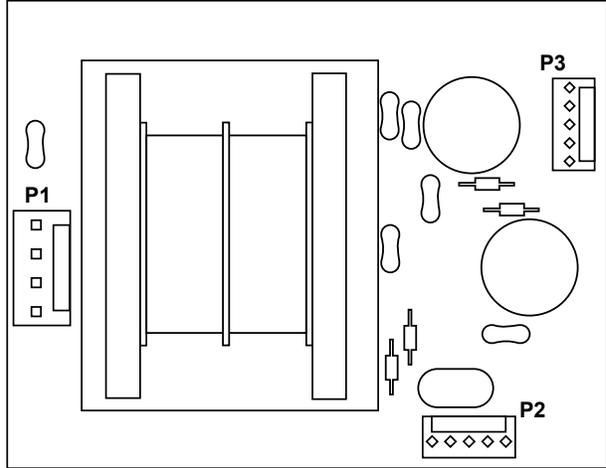


- UIB Board Legend**
- P1.** Connector for Control Panel LEDs and Display Indicators
  - P2.** Connector for Control Panel LEDs Display Indicators
  - P3.** Micro-Programming Header (Not Used)
  - P4.** Power Supply Input
  - P7.** LIN Communication with Electronic Oven Control (EOC)
  - P9.** LIN Communication with Induction System and Cooktop Relay Board
  - J2.** Rotary Control Signal Connector

## WIRE HARNESS CAPACITOR (some models)

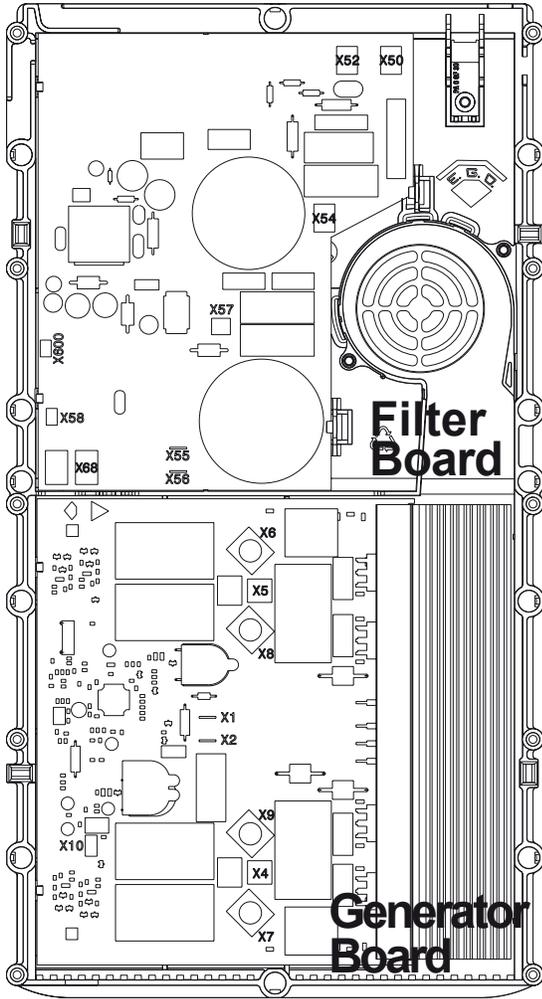


## POWER SUPPLY BOARD



- Power Supply Board Legend:**
- P1.** AC Input Voltage (120VAC)
  - P2.** Not Used
  - P3.** DC Outputs

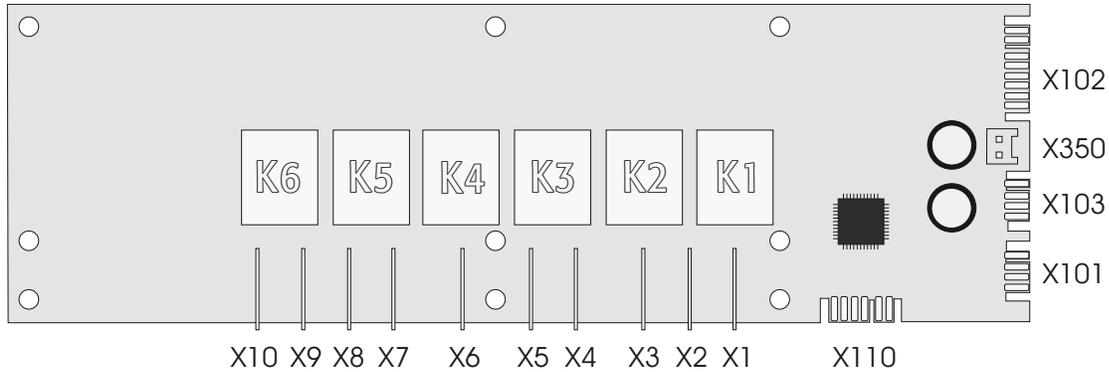
# INDUCTION MODULE



## Induction Module Legend:

- X5/X6X8. Right Front Element
- X4/X7/X9. Right Rear Element
- X50/L1. L1 Line Voltage Input
- X52/N1. L2 Line Voltage Input
- X54/GND. Ground Line Voltage Input
- X68. Communication with UIB and Relay Board

# RADIANT ZONES RELAY BOARD



## Relay Board Legend:

- X1. Left Rear Element
- X2. L2 Line Voltage Input
- X3. Not Used
- X4. L2 Line Voltage Input
- X5. Left Front Element
- X6. Bridge Element
- X7. L2 Line Voltage Input
- X8. Not Used
- X9. Not Used
- X10. Not Used
- X101/103. Communication with ESEC and Induction Module (could be either X101 and X103)
- X102. Surface Element Hot Signal Inputs
- X110. Micro Programming header (not used)
- X350. Thermostats Signal Inputs (Shorted)
- K1. Relay for Left Rear Element
- K2. Not Used
- K3. Relay for Left Front Element
- K4. Relay for Bridge Element
- K5. Not Used
- K6. Not Used

## COOKTOP ZONES ERROR CODES

Error #	Condition	Suggested Corrective Action
<b>30"</b>		
14	UI Panel cable missing	1) Verify all cables between Rotary Boards & ESEC20 UIB are well connected && not damaged. 2) Verify cable between Rotary Board && Pilot Lamps is connected && not damage. 3) Change ESEC20 UIB) 4) Change Rotary Board
21	Touch: Lin error - no communications	1) Verify communication harnesses between ESEC20 UIB, Induction Generator Housing && Relay Board are well connected && not damaged. 2) Change ESEC20 UIB. 3) Change Relay Board. 4) Replace the Induction Generator Housing.
32	12V on the service section to low (relay board)	1) Verify harness between Induction Generator Housing && Relay Board. 2) Change the Relay Board. 4) Replace the Induction Generator Housing.
36	LIN error, bad communication.	1) Verify LIN communication cable is well connected && not damaged. 2) Replace relay board.
37	Relay Voltage Error" and indicates that the number of relays switched on is wrong	1) Replace relay board.
38	General HW/SW error, relay board	1) Replace relay board.
39	Incorrect configuration, ESEC20 vs Induction Generator Housing or Relay Board.	Execute following sequence to force cooktop reconfiguration (Be sure the good ESEC20 UIB is installed into the cooktop)
		1-Put all rotary control to the first detent position clockwise (1 o'clock).
		2-Put all rotary control to the first detent position counterclockwise (11 o'clock). The system should then reconfigure, showing walking dashes on the cooking zones displays.
		3-Put all rotary controls to "Off" position. There should be no more error code and the cooktop is ready for operation.
	4-Test all zones for correct operation.	
51	Element temperature sensor break, (Relay Board)	1) Check jumper wire harness at X350 of relay board. Replace if defective. 2) Change Relay Board.
54	Element temperature sensor break, cook place 4 (Rear Right)	1) Verify element temperature sensor is correctly connected to the induction housing. 2) Replace element if the temperature sensor resistor value is not approximatively 1000 ohms at room temperature. 3) Replace the Induction Generator Housing
55	Element temperature sensor break, cook place 5 (Front Right)	
61	Heat sink temperature sensor break on Relay Board	1) Verify cooktop ventilation is correct(airway & fan) 2) Verify if the cooktop is correctly re-assembled && installed. 3) Change the Relay Board.
64	Element temperature sensor too hot cook place 4 (Rear Right)	1) Verify cooktop ventilation is correct(airway & fan). 2) Verify if the cooktop is correctly re-assembled && installed. 3) Verify element temperature sensor is correctly connected to the induction housing. 4) Replace element if the temperature sensor resistor value is not approximatively 1000 ohms at room temperature. 5) Replace the Induction Generator Housing.
65	Element temperature sensor too hot cook place 5 (Front Right)	
80	General HW/SW error, Induction Generator Assy	1) Replace Induction Generator Housing
81	General HW/SW error, relay board	1) Replace relay board.
90	Wrong connection secondary voltage of the power pack too high (primary > 300V)	1) Verify AC input voltage at the cooktop input. 2) Verify AC main input cables & screws 3) Replace the Filter Board on the Induction Generator Housing
91	Synchronous impulse (net zero crossover)	1) Test cables & connections on the Induction Generator Housing. 2) Replace the Induction Generator Housing
92	12V on the service section to low (Induction Generator Housing)	1) Test cables & connections on the Induction Generator Housing. 2) Replace the Induction Generator Housing
93	5V overcurrent on the switched 5V on the service section	
94	Sub LIN error communication filter service section incorrectly - This is an error detected between the filter board and the power boards.	1) Verify cable between filter board X58 and generator board X10. 2) Verify the thermal limiter resistor value (installed in the heat sink) to be approximatively 0 ohm. 3) Replace the Induction Generator Housing.
95	Mains voltage signal invalidly phase 1, undervoltage or optocoupler defective - This is an indication that one phase is wrong. The other phase will still work.	1) Verify AC input voltage at the cooktop input. 2) Verify AC main input cables & screws 3) Verify the fuse resistance to be approximatively 0 ohm. 4) Replace the Induction Generator Housing
96	LIN error, bad communication.	1) Replace the Induction Generator Housing
97	Heat sink temperature sensor break	1) Replace the Induction Generator Housing
98	General HW/SW error, Induction Generator Assy	1) Replace the Induction Generator Housing

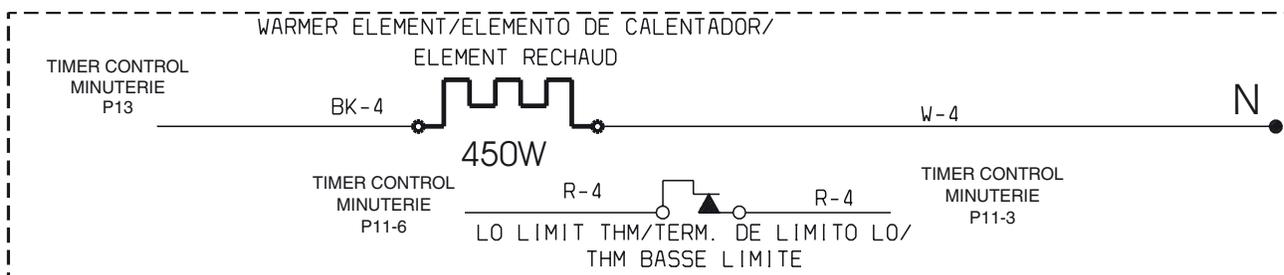
## OVEN CIRCUIT ANALYSIS MATRIX

	On Relay Board									On Display Board
	ELEMENTS			Conv Fan J3-5	Oven Light J3-3	Door Motor J3-4	DLB L2 out P1	Cooling Fan Low Speed J3-2	Cooling Fan High Speed J3-1	Door Switch P11-3 / P11-4
	Bake P9	Broil P7	Conv P11							
Bake	X	X	X*	X			X	X		
Broil		X					X	X	X	
Convection Bake	X	X	X	X			X	X		
Convection Roast	X	X	X	X			X	X		
Convection Broil		X		X			X	X	X	
Clean	X	X					X	X	X	
Locking / Unlocking						X				
Light					X					
Door Open					X					
Door Closed										X

## ELECTRONIC SURFACE ELEMENT CONTROL (ESEC) FAULT CODE DESCRIPTIONS

<b>E013</b>	Bad EEPROM.	Replace <i>ESEC-UIB</i> .
<b>E014</b>	Loss of Display tail #0.	Check connection P1 on <i>ESEC-UIB</i> and P1 on <i>ESEC Rotary HI Board (RR)</i> .
	Loss of Display tail #1.	Check connection P2 on <i>ESEC-UIB</i> and P2 on <i>ESEC Rotary HI Board (RF)</i> .
	Loss of Keyboard Tail.	Check connection J2 on <i>ESEC-UIB</i> and J8 (RF).
<b>E015</b>	<i>ESEC</i> self test failed.	An E015 error code may indicate the <i>ESEC-UIB</i> is not receiving a synchronization signal from the <i>ESEC-Relay Board</i> . Check first if J2 pin 5 on the <i>ESEC-Relay Board</i> is wired to P4 pin 5 on the <i>ESEC-UIB</i> . If wiring is good and the problem is still there, replace the <i>ESEC-UIB</i> . If the problem persists, replace the <i>ESEC-Relay Board</i> .

## WARM AND SERVE DRAWER DIAGRAM



When the Warm and Serve Drawer is first turned on, a "Preheat" circuit is established to provide full power (120 volts). When the temperature at the preheat thermostat reaches 150°F the thermostat opens, and the warmer element starts cycling. If the control is placed on a lower setting, it is possible for the temperature in the drawer to drop enough to allow the preheat thermostat to close again which will allow the element to reenter the "Preheat" mode at full power.

## ELECTRONIC OVEN CONTROL (EOC) FAULT CODE DESCRIPTIONS

**Note:** Generally speaking "F1x" implies a control failure, "F3x" an oven probe problem, and "F9x" a latch motor problem.

Code	Condition / Cause	Suggested Corrective Action
<b>F10</b>	Control has sensed a potential runaway oven condition. Control may have shorted relay, RTD sensor probe may have a gone bad.	<b>1)</b> Check RTD sensor probe and replace if necessary. If oven is overheating, disconnect power. If oven continues to overheat when power is reapplied, replace the <i>EOC</i> .
<b>F11</b>	Shorted Key: a key has been detected as pressed (for a long period) will be considered a shorted key alarm and will terminate all oven activity.	<b>1)</b> Press <b>Cancel</b> key. <b>2)</b> If fault returns, replace the keyboard (membrane). <b>3)</b> If the problem persists, replace the <i>EOC</i> .
<b>F13</b>	Control's internal checksum may have become corrupted.	<b>1)</b> Press <b>Cancel</b> key. <b>2)</b> Disconnect power, wait 10 seconds and reapply power. If fault returns upon power-up, replace <i>EOC</i> .
<b>F14</b>	Misconnected keyboard cable.	<b>1)</b> Disconnect power. Verify the flat cable connection between the keyboard membrane and the <i>EOC</i> on J2 and J3. <b>2)</b> If the problem persists, replace the <i>EOC</i> . <b>3)</b> If the connection is good but the problem persists, replace the keyboard (membrane switch).
<b>F15</b>	Controller self check failed.	<b>1)</b> Replace the <i>EOC</i> .
<b>F20</b>	Control had detected a problem with the communication link with the ESEC.	<b>1)</b> Check connection between P6 on <i>EOC</i> and P7 on <i>ESEC-UIB</i> . <b>2)</b> If problem persist, replace <i>ESEC-UIB</i> . <b>3)</b> If all above steps failed to correct situation, replace <i>EOC</i> .
<b>F30</b>	Open RTD sensor probe/ wiring problem. Note: <i>EOC</i> may initially display an "F10", thinking a runaway condition exists.	<b>1)</b> Check wiring in probe circuit for possible open condition. <b>2)</b> Check RTD resistance at room temperature (compare to probe resistance chart). If resistance does not match the chart, replace the RTD sensor probe.
<b>F31</b>	Shorted RTD sensor probe / wiring problem.	<b>3)</b> Let the oven cool down and restart the function <b>4)</b> If the problem persists, replace the <i>EOC</i> .
<b>F62</b>	Missing zero-cross signal.	<b>1)</b> Replace the <i>EOC</i> .
<b>F90</b>	Door motor mechanism failure. The controller does not see the motor rotating.	<b>1)</b> Press <b>Cancel</b> key. <b>2)</b> If <b>Cancel</b> key does not eliminate problem, turn off power for 30 seconds, then turn on power. <b>3)</b> Check wiring of Lock Motor, Lock Switch and Door Switch circuits. <b>4)</b> Unplug the lock motor from the board and apply power (L1) directly to the Lock Motor. If the motor does not rotate, replace Lock Motor Assembly. <b>5)</b> Check Lock Switch for proper operation (do they open and close, check with ohmmeter). The Lock Motor may be powered as in above step to open and close Lock Switch. If the Lock Switch is defective, replace Motor Lock Assembly. <b>6)</b> If all above steps fail to correct situation, replace the <i>EOC</i> in the event of a motor that does not rotate.
<b>F95</b>	Door motor mechanism failure. The motor does not stop rotating.	<b>1)</b> Press <b>Cancel</b> key. <b>2)</b> Turn power off for 30 seconds then turn power on. If the door motor never stops rotating, or if the F95 error comes back again, verify wiring of the motor. If wiring is good, replace the <i>EOC</i> . <b>3)</b> If the problem persists, replace the motor door latch assembly.







